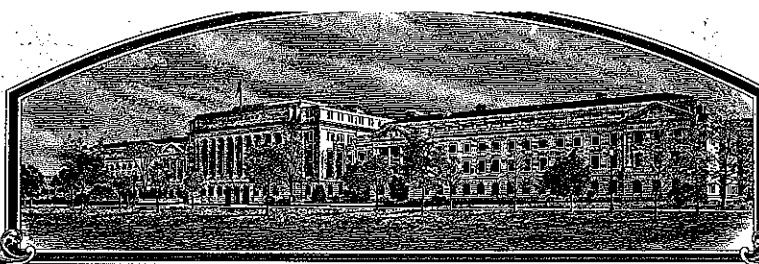


No.

200600271



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Busch Agricultural Resources, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Merit 57'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of June, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

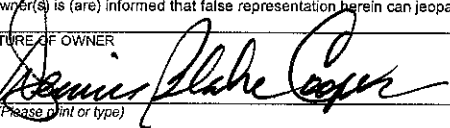
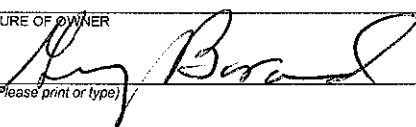
1. NAME OF OWNER BUSCH AGRICULTURAL RESOURCES, INC.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME 2B99-2657		3. VARIETY NAME 'Merit 57' <i>mat 6/13/07</i>	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 3515 Richards Lake Road Fort Collins, Colorado, 80524 USA		5. TELEPHONE (include area code) (970) 221-5622		FOR OFFICIAL USE ONLY PVPO NUMBER 200600271 FILING DATE August 17, 2006	
		6. FAX (include area code) (970) 472-2334			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		9. DATE OF INCORPORATION 01-01-1981	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Blake Cooper or Gary Bovard Busch Agricultural Resources, Inc. 3515 Richards Lake Road Fort Collins, Colorado, 80524 USA				FILING AND EXAMINATION FEES: \$ 4382 DATE 8/17/06 CERTIFICATION FEE: \$ 768.00 DATE 1-30-2007	
11. TELEPHONE (include area code) (970) 221-5622		12. FAX (include area code) (970) 472-2334		13. E-MAIL blake.cooper@anheuser-busch.com	
14. CROP KIND (Common Name) Barley		16. FAMILY NAME (Botanical) Graminea		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP HORDEUM VULGARE L.		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input type="checkbox"/> Exhibit F. Declaration Regarding Deposit g. <input checked="" type="checkbox"/> Voucher Sample (3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) h. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)				20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23) 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED 22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)				24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER 		SIGNATURE OF OWNER 			
NAME (Please print or type) Dennis Blake Cooper		NAME (Please print or type) Gary Bovard			
CAPACITY OR TITLE Senior Manager, Barley Research		DATE		CAPACITY OR TITLE Senior Director Technical Operations	
				DATE 8-14-06	

EXHIBIT A

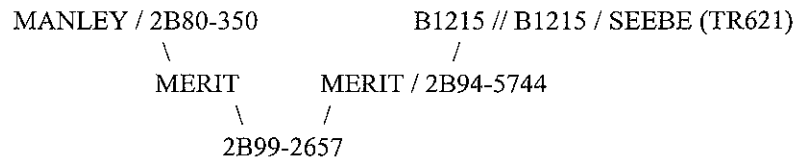
ORIGIN AND BREEDING HISTORY OF ~~2B99-2657~~ 'Merit 57'M44
6/13/07

PEDIGREE: Merit 2* / 2B94-5744

Date of Cross: 1996

HISTORY:

The line 2B99-2657 was derived from the backcross (C96-4052) made in spring of 1996 in Ft. Collins, CO between Merit as female and the F₁ (C96-4009) used as male. The recurrent female parent (Merit) is a released BARI cultivar with a pedigree of Manley / 2B80-350. The male parent (C96-4009) is an F₁ hybrid with a pedigree of Merit / 2B94-5774. The parent 2B94-5774 is an experimental line from the BARI breeding program with the pedigree B1215 2*// Seebe (TR621). Seebe is a line from the Alberta Agriculture in Lacombe that has scald resistance. The extended pedigree of 2B99-2657 is shown below.



The BC₁F₁ generation was grown in the winter of 1996/97 in the greenhouse as a planted population of 200 seeds. The BC₁F₂ generation was grown in Irricana, Alberta, Canada in 1997. Heads of selected plants were harvested and bulked on the following criteria: Straw strength, Maturity, and general foliar disease resistance. The F₃ generation was grown in the Ft. Collins greenhouse by single seed descent (~98 planted seed) during the fall / winter of 1997/98. In the spring of 1998 there were 88 F₄ rows grown in Brooks, Alberta, Canada, of which twenty-two (22) rows were selected on visual appearance, and NIR whole grain scores for protein, predicted extract, etc. The line was initially derived as a single F₅ observation row (NZ0679) in a counter-season increase in Christchurch, NZ during the winter of 1998/99. This row was assigned the mother-line designation 2B99-2657 and was first entered into yield trials in 1999 as an F_{5,6} and subsequently tested at multiple locations in the U.S and Canada from 1999- 2005

From the first year of yield testing through the release of the variety, continual assessments of numerous agronomic and malting traits are carried out. These traits are assessed on samples grown at several locations per year and statistically compared to the most widely grown commercial varieties, plus selected advanced experimental lines. The varieties Harrington, B1202, and Merit were used throughout the testing program. 2B99-2657 was entered in the Western Spring Barley Nursery in 2003. The following criteria are assessed at each stage of yield trial testing:

Agronomic traits:

Yield
Straw strength (lodging)
Height
Maturity
Test weight
Resistance to scald
Resistance to net blotch
Resistance to spot blotch

Malting traits:

Kernel plumpness
Extract Level
Total protein
Soluble protein
Alpha amylase
Diastatic power
Wort viscosity
Turbidity

Our most important agronomic traits are yield, straw strength and disease resistance. Our most important malting traits are extract level, protein and enzyme levels (alpha amylase and diastatic power).

2B99-2657 was tested at the pilot scale level in 2004 and will be tested again in 2005 by the American Malting Association. It is targeted as a two-rowed malting barley for the Intermountain states of Idaho, Montana and Wyoming.

200600271

In 2001 head selections were made at Fort Collins, Colorado from a uniform and stable F₉ population to initiate purification and multiplication. 80 Headrows were grown in Ft Collins 2002. Sixty-two of the 80 headrows were selected, uniform and true to type, and were bulked and grown in Ft Collins in 2003 as 0.1 acre pre-breeder seed increase. Seed produced from this increase was use to produce Breeder Seed in Ft Collins in 2004. ~~2B99~~ 'Merit 57' ~~2657~~ has been uniform and stable from F₉ through F₁₂. Less than 0.05% of the plants were rogued from fields in 2001. Approximately 95% of the rogued plants were 2 to 4 centimeters taller than 2B99-2657. Less than 0.05% total variant plants may be encountered in subsequent generations. Certified seed will be available in 2008.

MAH
6/13/07

EXHIBIT B

STATEMENT OF DISTINCTNESS

'Merit 51'

~~2B99-2657~~ is most similar to the spring barley variety "Merit", however it can be distinguished by the following agronomic characteristic:

-2B99-2567 has greater Scald resistance than Merit.

On a scale of 1 - 9 (1 = no disease and 9 = severe disease), 2B99-2657 has a score of 2.40 and Merit scores 5.24.

See following pages for supportive data and statistics.

MAH
6/13/67

USED TRANSFORMED DATA FOR STATS — RAW DATA FOR MEANS

MAR 6/13/07

Scald Severity B2657 vs. MERIT Over Locations

YEAR	Country	LOCATION	raw SCLD B2657	raw SCLDD MERIT	Raw Difference	Count of Paired Obs. N	df	Paired-t Statistic	Prob Two- tailed t	Prob One- tailed t
2001	CN	NEAPOLIS 2001	2.0	5.0	-3.0	1	0	-	-	-
2001	CN	OHATON 2001	2.0	5.5	-3.5	1	0	-	-	-
2002	USA	GREENHOUSE 2002	8.0	8.0	0.0	1	0	-	-	-
2004	USA	FAIRFIELD 2004	0.9	4.0	-3.1	2	1	-3.1000	0.8080	0.4040
2004	CN	IRRICANA 2004	2.0	5.0	-3.0	1	0	-	-	-
2004	CN	LACOMBE 2004	3.3	6.0	-2.7	1	0	-	-	-
2004	CN	OLDS 2004	3.5	6.0	-2.5	1	0	-	-	-
2005	USA	2005 PATH GH	7.0	6.7	0.3	1	0	-	-	-
2005	CN	EDMONTON PATH	3.1	5.2	-2.1	1	0	-	-	-
2005	USA	FAIRFIELD 2005	0.0	4.5	-4.5	4	3	-99.9999	0.0000	0.0000
2005	CN	FORT ST JOHN 2005	1.3	2.2	-0.9	1	0	-	-	-
2005	CN	IRRICANA 2005	2.0	3.8	-1.8	2	1	-2.5676	0.2364	0.1182
2005	CN	LACOMBE PATH	3.9	6.1	-2.2	1	0	-	-	-
2005	CN	NEAPOLIS 2005	2.0	7.0	-5.0	1	0	-	-	-
2005	CN	OLDS 2005	2.5	4.5	-2.0	1	0	-	-	-
2006	CN	2006 BEISEKER	1.0	1.5	-0.5	1	0	-	-	-
2006	CN	2006 EDMONTON PATH	3.8	3.0	0.8	1	0	-	-	-
2006	CN	2006 LACOMBE PATH	5.5	4.8	0.7	1	0	-	-	-
2006	USA	FAIRFIELD 2006	1.8	7.5	-5.7	5	4	-9.5917	0.0007	0.0004
2006	CN	LETHBRIDGE 2006	2.7	3.3	-0.6	1	0	-	-	-
2006	CN	OLDS 2006	3.0	7.0	-4.0	1	0	-	-	-
2006	CN	WILKIE 2006	4.5	4.0	0.5	1	0	-	-	-
Mean of 4 Locations with N>1			1.17	4.94	-3.77	13	9	-28.8148	0.2613	0.1306
All 31 locations over All years			2.40	5.24	-2.84	31	30	-7.5069	0.0001	0.0001

1.56 EFFECT SIZE

Scald Severity B2657 vs. MERIT Over Years

		raw SCLD	raw SCLDD	Raw	Count of	df	Paired-t	Prob Two-	Prob One-
	YEAR	B2657	MERIT	Difference	N		Statistic	tailed t	tailed t
	2001	2.0	5.3	-3.3	2	1	-16.4000	0.0388	0.0194
	2002	8.0	8.0	0.0	1	0	-	-	-
	2004	2.1	5.0	-2.9	5	4	-8.3031	0.0011	0.0006
	2005	2.0	4.8	-2.8	12	11	-4.8758	0.0005	0.0003
	2006	2.5	5.6	-3.1	11	10	-3.5037	0.0057	0.0029
Mean of last 3 Years taken individually		2.22	5.13	-2.9	28	25	-5.5609	0.0024	0.0012
All paired data over All years		2.40	5.24	-2.84	31	30	-7.5069	0.0001	0.0001

Wilcoxon / Kruskal-Wallis Tests (Rank Sums)

Level	Count	Score Sum	Score Mean	(Mean-Mean0)/Std0
2B99-2657	31	616.5	19.8871	-5.073
MERIT	31	1336.5	43.1129	5.073

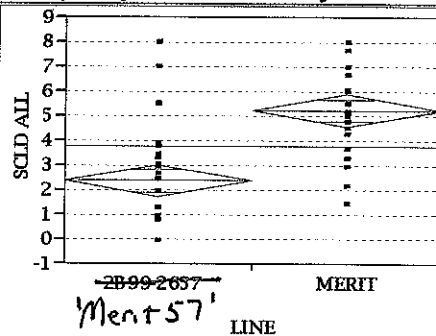
2-Sample Test, Normal Approximation

S	Z	Prob> Z
1336.5	5.07340	<.0001

1-way Test, ChiSquare Approximation

ChiSquare	DF	Prob>ChiSq
25.8110	1	<.0001

Oneway Analysis of SCLD ALL By LINE



Oneway Anova

Summary of Fit

Rsquare	0.387621
Adj Rsquare	0.377415
Root Mean Square Error	1.81556
Mean of Response	3.820968
Observations (or Sum Wgts)	62

t-Test

	Differenc	t-Test	DF	Prob > t
Estimate	-2.8419	-6.163	60	<.0001
Std Error	0.4612			
Lower 95%	-3.7644			
Upper 95%	-1.9195			

Assuming equal variances

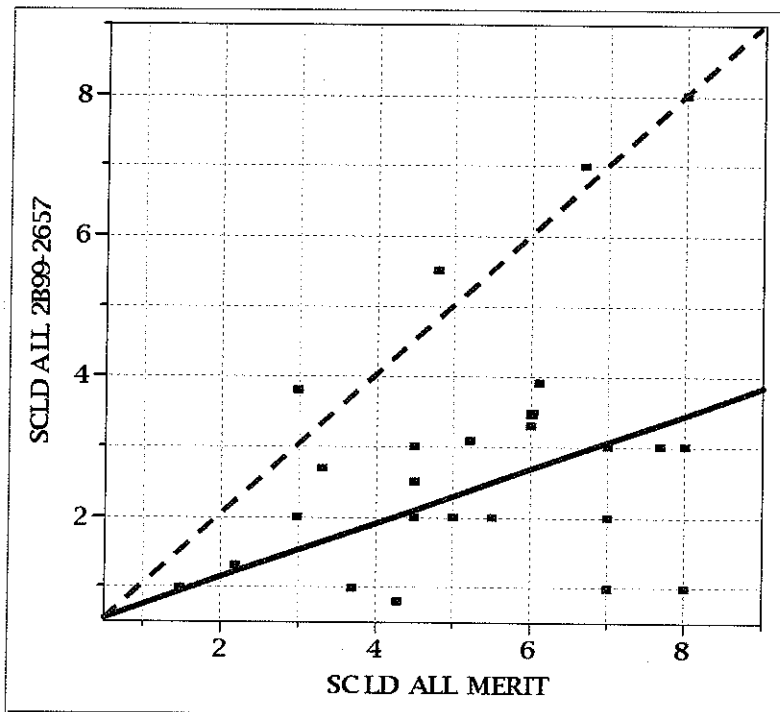
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
LINE	1	125.18726	125.187	37.9786	<.0001
Error	60	197.77548	3.296		
C. Total	61	322.96274			

Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
2B99-2657	31	2.40000	0.32608	1.7477	3.0523
MERIT	31	5.24194	0.32608	4.5897	5.8942

Std Error uses a pooled estimate of error variance



According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
Barley (*Hordeum vulgare* L.)

NAME OF APPLICANT (S)	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME
BUSCH AGRICULTURAL RESOURCES, INC.	2B99-2657	'Merit 57' msh
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country)		FOR OFFICIAL USE ONLY 6/13/07
3515 Richards Lake Road Fort Collins, Colorado 80524 USA		PVPO NUMBER 200600271

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (i.e.

0	9	9
---	---	---

 or

0	9
---	---

) when the number is either 99 or less or 9 or less.

1. GROWTH HABIT:

1

 1 = Spring 2 = Facultative Winter 3 = Winter Early Growth:

3

 1 = Prostrate 2 = Semi-Prostrate 3 = Erect

2. MATURITY: (50% Flowering)

2

 1 = Early (California Mariout) 2 = Mid-Season (Betzes) 3 = Late (Frontier)

0	0	2
---	---	---

 No. Days Earlier Than Merit *
 Same as Check _____ *

--	--	--

 No. of Days Later Than _____ *

3. PLANT: (From Soil Level to Top of Head)

3

 1 = Semi-Dwarf 2 = Short (California Mariout) 3 = Medium Tall (Betzes) 4 = Tall (Conquest)

2

 cm Shorter Than Merit *
 Same as Check _____ *

--

 cm Taller Than _____ *

4. STEM:

2

 Exsertion (Flag to Spike at Maturity): 1 = (0 - 3 cm) 2 = (3 - 10 cm) 3 = (10 - 15 cm)

1

 Anthocyanin: 1 = Absent 2 = Present

0	5
---	---

 No. of Nodes (Originating from Node Above Ground)

5

 Collar Shape: 1 = Closed 2 = V-Shaped 3 = Open 4 = Modified Closed or Open 5 = Saucer

1

 Shape of Neck: 1 = Straight 2 = Snaky 3 = Other (Specify) _____

* A commercial variety grown in the same trial.

5. LEAF:

200600271

- 1 Basal Leaf Sheath (Seedling): 1 = Glabrous 2 = Pubescent
- 2 Position of Flag Leaf (At Boot Stage): 1 = Drooping 2 = Upright
- 2 Waxiness: 1 = Absent (Glossy) 2 = Slightly Waxy 3 = Waxy
- 1 1 mm Width (First Leaf Below Flag Leaf)
- 1 2 cm Length (First Leaf Below Flag Leaf)
- 1 Anthocyanin in Leaf Sheath: 1 = Absent 2 = Present

6. HEAD:

- 1 Type: 1 = Two-Rowed 2 = Six-Rowed
- 4 Density: 1 = Lax 2 = Erect (Not Dense) 3 = Erect (Dense) 4 = Other (Specify) Mid-dense
- 4 Shape: 1 = Tapering 2 = Strap 3 = Clavate 4 = Other (Specify) Parallel
- 2 Waxiness 1 = Absent (Glossy) 2 = Slightly Waxy 3 = Waxy
- 1 Lateral Kernels Overlap: 1 = None 2 = At Tip 3 = 1/4 – 1/2 of Head
- 3 Rachis (Hair on Edge): 1 = Lacking 2 = Few 3 = Covered

7. GLUME:

- 2 Length: 1 = 1/3 of Lemma 2 = 1/2 of Lemma 3 = More than 1/2 of Lemma
- 3 Hairs: 1 = None 2 = Short 3 = Long
- 3 Hair Covering: 1 = None 2 = Restricted to Middle 3 = Confined to Band 4 = Completely Covered
- 2 Awns: 1 = Less than Equal to Length of Glumes 2 = Equal to Length of Glumes 3 = More than Equal to Length of Glumes
- 3 Awn Surface: 1 = Smooth 2 = Semi-Smooth 3 = Rough

8. LEMMA:

- 5 Awn: 1 = Awnless
2 = Awnlets on Central Rows, Awnless on Lateral Rows
3 = Short on Central Rows, Awnlets on Lateral Rows
4 = Short (Less than Equal to Length of Spike)
5 = Long (Longer than Spike)
6 = Hooded
- 4 Awn Surface: 1 = Awnless 2 = Smooth 3 = Semi-Smooth 4 = Rough
- 2 Teeth: 1 = Absent 2 = Few 3 = Numerous
- 1 Hair: 1 = Absent 2 = Present
- 1 Shape of Base: 1 = Depression 2 = Slight Crease 3 = Transverse Crease
- 2 Raachilla Hairs: 1 = Short 2 = Long

9. STIGMA:

- 2 Hairs: 1 = Few 2 = Many

10. SEED:

200600271

<input type="text" value="2"/>	Type:	1 = Naked	2 = Covered
<input type="text" value="1"/>	Hairs on Ventral Furrow:	1 = Absent	2 = Present
<input type="text" value="4"/>	Length:	1 = Short (8.0 mm) 2 = Short to Mid-Long (7.5 – 9.0 mm) 3 = Mid-Long (8.5 – 9.5 mm) 4 = Mid-Long to Long (9.0 – 10.5 mm) 5 = Long (10.0 mm)	
<input type="text" value="2"/>	Wrinkling of Hull:	1 = Naked	2 = Slightly Wrinkled 3 = Semi-Wrinkled 4 = Wrinkled
<input type="text" value="1"/>	Aleurone Color:	1 = Colorless (White or Yellow)	2 = Blue
<input type="text" value="0"/> <input type="text" value="0"/>	Percent Abortive	<input type="text" value=""/> <input type="text" value=""/>	GMS. per 1000 Seeds

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="1"/> Septoria	<input type="text" value="2"/> Net Blotch	<input type="text" value="3"/> Spot Blotch	<input type="text" value="2"/> Powdery Mildew
<input type="text" value="2"/> Loose Smut	<input type="text" value="0"/> Bacterial Blight	<input type="text" value="2"/> Covered Smut	<input type="text" value="3"/> False Loose Smut
<input type="text" value="2"/> Stem Rust MCC	<input type="text" value="3"/> Leaf Rust	<input type="text" value="3"/> Scab	<input type="text" value="3"/> Scald
<input type="text" value="0"/> Aster Yellows Virus	<input type="text" value="0"/> BSMV	<input type="text" value="0"/> BYDV	<input type="text" value="1"/> Other (Specify) <u>Barley strip rust</u>

12. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="0"/> Green Bug	<input type="text" value="0"/> English Grain Aphid	<input type="text" value="0"/> Chinch Bug	<input type="text" value="0"/> Armyworm
<input type="text" value="0"/> Grasshoppers	<input type="text" value="0"/> Cereal Leaf Beetle	<input type="text" value="0"/> Other (Specify) _____	
Hessian Fly Races {	<input type="text" value="0"/> GP	<input type="text" value="0"/> A	<input type="text" value="0"/> B
	<input type="text" value="0"/> D	<input type="text" value="0"/> E	<input type="text" value="0"/> F
		<input type="text" value="0"/> C	<input type="text" value="0"/> Other (Specify) _____
		<input type="text" value="0"/> G	

13. CHEMICAL: (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Intermediate, 4 = Tolerant)

<input type="text" value="0"/> DDT	<input type="text" value="0"/> Other (Specify) _____
------------------------------------	------------------------------------------------------

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Tillering	MERIT	Seed Size	MERIT
Leaf Size	MERIT	Coleoptile Elongation	MERIT
Leaf Color	MERIT	Seedling Pigmentation	MERIT
Leaf Carriage	MERIT		

REFERENCES:

The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

- Wiebe, G.A., and D.A. Reid, 1961, Classifications of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Department of Agriculture.
- Reid, D.A., and G.A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Department of Agriculture, pp. 61-84.
- Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

EXHIBIT D

BOTANICAL DESCRIPTION OF ~~2B99-2657~~ 'Merit 57'MAH
6/13/07

2B99-2657 is a two-rowed, mid-season spring barley bred and developed by Busch Agricultural Resources, Incorporated, Ft. Collins, Colorado. It has excellent malting quality.

Juvenile growth habit is erect. Plant color at boot is green with an upright flag leaf. Head shape is parallel and mid-dense in density with a slightly nodding head type. Neck is straight with a saucer collar. First rachis segment is slightly bent back and is mid-sized. Base of the first segment is a margin flange with hairs on the margin. Rachis shape is plain with long hairs covering the margin edge. Glume length is one half the length of the kernel and glume hair is long and confined to a band. The glume awns are rough and equal to the length of the glume. Lemma awns are rough, longer than the spike and persistent. Lemma teeth are few. Lemma hair is absent and the base is a depression. Lateral floret formation is divergent with rounded lemma tips. Seed is covered, mid-long to long, finely wrinkled with slight wax present. The aleurone is colorless. Palea tips are mid-length. Rachilla length is one-fourth the length of the kernel with many long hairs, thicker at the base. Ventral crease is open and lacks crease hairs and fence hairs.

2B99-2657 is an intermountain two-rowed variety well adapted to Montana, Idaho and Wyoming.

AGRONOMIC CHARACTERISTICS:

Yield Trials (1999-2005)

Variety	Grain Yield (Bu/ac)	Days to Heading (Julian days)	Relative Maturity (1-9) §	Plant Height (cm)	Lodging (1-9) †	Net Blotch (1-9) ‡	Scald (1-9) ‡
Station years	49	50	14	58	33	17	20
2B99-2657	119.1	175.2	5.3	86.0	2.8	1.9	2.3
Merit	116.2	176.8	5.8	88.4	2.6	1.9	5.0
t-Test	0.1267(ns)	<.0001	0.1129(ns)	<.0001	0.2552(ns)	0.9043(ns)	<.0001

§ Relative Maturity 1= early and 9 = late

† Lodging of 1 = no lodging and 9 = severe lodging.

‡ Foliar Diseases 1= no disease and 9 = severe disease.

MALTING QUALITY CHARACTERISTICS:

Quality Tests (1999-2005)

Entry	Barley Protein (%)	Malt Protein (%)	Plump Kernels (%)	Fine Extract (%)	Wort Protein (%)	S/T (%)	F-C Diff. (%)	□- Glucan ppm	Diasatic Power (°L)	Alpha-Amylase (20° DU)
Station years	34	35	57	31	33	33	16	31	33	33
2B99-2657	11.6	11.2	86.8	82.1	5.4	49.0	1.1	115.2	139.5	75.4
Merit	11.7	11.5	85.4	81.2	5.3	47.0	1.0	159.3	149.4	72.4
t-Test	0.6516 (ns)	0.0645	0.0555	<.0001	0.1597 (ns)	0.0076	0.1365 (ns)	<.0001	0.0007	0.0003

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) BUSCH AGRICULTURAL RESOURCES, INC.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER 2B99-2657	3. VARIETY NAME 'Merit 57' mat 6/13/07
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 3515 Richards Lake Road Fort Collins, Colorado, 80524 USA	5. TELEPHONE (Include area code) (970) 221-5622	6. FAX (Include area code) (970) 472-2334
7. PVPO NUMBER 200600271		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

200600271

EXHIBIT E.

STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

Busch Agricultural Resources, Incorporated is applicant for protection in this case being:

a.) The incorporated business registered in Delaware for and within regular employees have bred ~~2B99-~~ 'Merit 57'
~~2657.~~

b.) The proprietary owner and intending commercial seller of 2B99-2657.

MAY
6/13/07

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**EXHIBIT F
DECLARATION REGARDING DEPOSIT**

NAME OF OWNER (S) Busch Agricultural Resources, Inc.	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 3515 Richards Lake Road Fort Collins, Colorado 80524 USA	TEMPORARY OR EXPERIMENTAL DESIGNATION 2B99-2657
NAME OF OWNER REPRESENTATIVE (S) Dr. Blake Cooper or Gary Bovard	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 3515 Richards Lake Road Fort Collins, Colorado 80524 USA	VARIETY NAME 'Merit 57' m44 FOR OFFICIAL USE ONLY 6/13/07 PVPO NUMBER

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

Signature

Date